REMOTE SENSING OF ENVIRONMENT

An Interdisciplinary Journal

Volume 23

ELSEVIER

REMOTE SENSING OF ENVIRONMENT

An Interdisciplinary Journal

SCOPE OF THE JOURNAL

Remote Sensing of Environment serves the remote sensing community with the publication of scientific and technical results on theory, experiments, and applications of remote sensing of Earth resources and environment. Thoroughly interdisciplinary, the journal seeks papers from science and application areas utilizing remote sensing as a tool, as well as papers dealing with remote sensing technology development in such areas as:

- Agriculture & soil science
- Biophysical-spectral models
- Ecology & environmental science
- Forestry & range
- Geography & land information systems
- Geology & mineral resources
- Hydrology & water resources
- Image processing & analysis
- Meteorology & atmospheric science
- Oceanography & marine science
- Sensor systems & spectral measurements

In addition to original research papers, comprehensive state-of-the-art review articles and summaries of previously piece-wise published works are welcome. Tutorial papers of interest to educators and those engaged in remote sensing training are acceptable if sufficiently broad in their coverage. Brief papers containing little or no analysis but presenting new data are published as *Short Communications*.

Editor-in-Chief

MARVIN E. BAUER
Remote Sensing Laboratory, University of Minnesota
1530 N. Cleveland Ave., St. Paul, MN 55108

Editorial Board

N. J. J. BUNNIK
National Aerospace Laboratory, The Netherlands

ALEXANDER F. H. GOETZ
Jet Propulsion Laboratory

SAMUEL N. GOWARD
University of Maryland

G. GUYOT
Institut National de la Recherche Agronomique, France

FORREST G. HALL
Goddard Space Flight Center, NASA

FREEMAN F. HALL
Environmental Research Laboratories, NOAA

RAY D. JACKSON
Argicultural Research Service, USDA

VYTAUTAS KLEMAS
University of Delaware

DAVID A. LANDGREBE
Purdue University

RONALD J. P. LYON
Stanford University

GEORGE A. MAUL
Atlantic Oceanographic and Meteorological Laboratory, NOAA

E. PAUL McCLAIN
Satellite Research Laboratory, NOAA

RICHARD K. MOORE
University of Kansas

JACK F. PARIS
Jet Propulsion Laboratory

JOHN C. PRICE
Agricultural Research Service, USDA

VINCENT V. SALOMONSON
Goddard Space Flight Center, NASA

DAVID S. SIMONETT
University of California Santa Barbara

GWYNN H. SUITS
University of Michigan

HAROLD W. YATES
National Environmental Satellite Data and Information Service, NOAA

GEORGE J. ZISSIS
Environmental Research Institute of Michigan

REMOTE SENSING OF ENVIRONMENT

An Interdisciplinary Journal

Volume 23, Number 1, October 1987

Contents

DOUGLAS A. STOW (San Diego, CA)
Numerical Derivation of a Hydrodynamic Surface Flow Field from Time Sequential Remotely Sensed Data 1

MATHEW R. SCHWALLER (Greenbelt, MD)
A Geobotanical Investigation Based on Linear Discriminant and Profile Analyses of Airborne Thematic Mapper Simulator Data 23

A. K. FUNG AND M. F. CHEN (Arlington, TX) AND K. K. LEE (Singapore)
Fresnel Field Interaction Applied to Scattering from a Vegetation Layer 35

T. TAKASHIMA AND K. MASUDA (Ibaraki, Japan)
Emissivities of Quartz and Sahara Dust Powders in the Infrared Region (7–17 μm) 51

JERRY C. RITCHIE (Beltsville, MD), CHARLES M. COOPER (Oxford, MS), AND JIANG YONGQING (Wugong, China)
Using Landsat Multispectral Scanner Data to Estimate Suspended Sediments in Moon Lake, Mississippi 65

JOHAN KLEMAN (Stockholm, Sweden)
Directional Reflectance Factor Distributions for Two Forest Canopies 83

JERZY CIERNIEWSKI (Poznan, Poland)
A Model for Soil Surface Roughness Influence on the Spectral Response of Bare Soils in the Visible and Near-Infrared Range 97

YASUSHI YAMAGUCHI (Ibaraki, Japan)
Possible Techniques for Lithologic Discrimination Using the Short-Wavelength-Infrared Bands of the Japanese ERS-1 117

DARREL L. WILLIAMS AND FRANK M. WOOD, JR. (Greenbelt, MD)
A Transportable Hemispherical Illumination System for Making Reflectance Factor Measurements 131

REMOTE SENSING OF ENVIRONMENT

An Interdisciplinary Journal

Volume 23, Number 2, November 1987

Contents

Foreword 141

PAUL T. TUELLER (Reno, NV)
Remote Sensing Science Applications in Arid Environments 143

MELVIN B. SATTERWHITE AND J. PONDER HENLEY (Ft. Belvoir, VA)
Spectral Characteristics of Selected Soils and Vegetation in Northern Nevada and Their Discrimination Using Band Ratio Techniques 155

RICHARD O. WILSON (Anaheim, CA) AND PAUL T. TUELLER (Reno, NV)
Aerial and Ground Spectral Characteristics of Rangeland Plant Communities in Nevada 177

ELIZABETH M. MIDDLETON AND DONALD W. DEERING (Greenbelt, MD) AND SURAIYA P. AHMAD (Lanham, MD)
Surface Anisotropy and Hemispheric Reflectance for a Semiarid Ecosystem 193

A. R. HUETE (Tucson, AZ) AND R. D. JACKSON (Phoenix, AZ)
Suitability of Spectral Indices for Evaluating Vegetation Characteristics on Arid Rangelands 213

B. J. CHOUDHURY AND C. J. TUCKER (Greenbelt, MD)
Satellite Observed Seasonal and Inter-Annual Variation of Vegetation Over the Kalahari, The Great Victoria Desert, and The Great Sandy Desert: 1979–1984 233

COMPTON J. TUCKER AND BHASKER J. CHOUDHURY (Greenbelt, MD)
Satellite Remote Sensing of Drought Conditions 243

G. W. PETERSEN, K. F. CONNORS, D. A. MILLER, R. L. DAY, AND T. W. GARDNER (University Park, PA)
Aircraft and Satellite Remote Sensing of Desert Soils and Landscapes 253

RANDALL W. THOMAS (Berkeley, CA) AND SUSAN L. USTIN (Davis, CA)
Discriminating Semiarid Vegetation Using Airborne Imaging Spectrometer Data: A Preliminary Assessment 273

REMOTE SENSING OF ENVIRONMENT

An Interdisciplinary Journal

Volume 23, Number 3, December 1987

Contents

D. H. HOEKMAN (Wageningen, Netherlands)
Measurements of the Backscatter and Attenuation Properties of Forest Stands at X-, C- and L-Band 397

ROBERT A. ARNONE (NSTL, MS)
Satellite-Derived Color–Temperature Relationship in the Alboran Sea 417

K. P. GALLO (Washington, D.C.) AND C. S. T. DAUGHTRY (Beltsville, MD)
Differences in Vegetation Indices for Simulated Landsat-5 MSS and TM, NOAA-9 AVHRR, and SPOT-1 Sensor Systems 439

PETER CAMILLO (Greenbelt, MD)
A Canopy Reflectance Model Based on an Analytical Solution to the Multiple Scattering Equation 453

EUGENIO ZILIOLI AND MASSIMO ANTONINETTI (Milan, Italy)
Geostructural Evolution of the Southern Alps: Lineaments Trends Detected on Landsat Images 479

AUTHOR INDEX TO VOLUME 23 493

SUBJECT INDEX TO VOLUME 23 495

VOLUME CONTENTS